



**PRELIMINARY DECISION**  
**CitiPower distribution**  
**determination 2016–20**

**Attachment 5 – Regulatory**  
**depreciation**

October 2015

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Inquiries about this publication should be addressed to:

Australian Energy Regulator  
GPO Box 520  
Melbourne Vic 3001

Tel: (03) 9290 1444  
Fax: (03) 9290 1457

Email: [AERInquiry@aer.gov.au](mailto:AERInquiry@aer.gov.au)

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## Note

This attachment forms part of the AER's preliminary decision on CitiPower's revenue proposal 2016–20. It should be read with all other parts of the preliminary decision.

The preliminary decision includes the following documents:

### Overview

Attachment 1 – Annual revenue requirement

Attachment 2 – Regulatory asset base

Attachment 3 – Rate of return

Attachment 4 – Value of imputation credits

Attachment 5 – Regulatory depreciation

Attachment 6 – Capital expenditure

Attachment 7 – Operating expenditure

Attachment 8 – Corporate income tax

Attachment 9 – Efficiency benefit sharing scheme

Attachment 10 – Capital expenditure sharing scheme

Attachment 11 – Service target performance incentive scheme

Attachment 12 – Demand management incentive scheme

Attachment 13 – Classification of services

Attachment 14 – Control mechanism

Attachment 15 – Pass through events

Attachment 16 – Alternative control services

Attachment 17 – Negotiated services framework and criteria

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## Shortened forms

Shortened form	Extended form
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
AMI	Advanced metering infrastructure
augex	augmentation expenditure
capex	capital expenditure
CCP	Consumer Challenge Panel
CESS	capital expenditure sharing scheme
CPI	consumer price index
DRP	debt risk premium
DMIA	demand management innovation allowance
DMIS	demand management incentive scheme
distributor	distribution network service provider
DUoS	distribution use of system
EBSS	efficiency benefit sharing scheme
ERP	equity risk premium
Expenditure Assessment Guideline	expenditure forecast assessment Guideline for electricity distribution
F&A	framework and approach
MRP	market risk premium
NEL	national electricity law
NEM	national electricity market
NEO	national electricity objective
NER	national electricity rules
NSP	network service provider
opex	operating expenditure
PPI	partial performance indicators
PTRM	post-tax revenue model
RAB	regulatory asset base
RBA	Reserve Bank of Australia
repex	replacement expenditure

Shortened form	Extended form
RFM	roll forward model
RIN	regulatory information notice
RPP	revenue and pricing principles
SAIDI	system average interruption duration index
SAIFI	system average interruption frequency index
SLCAPM	Sharpe-Lintner capital asset pricing model
STPIS	service target performance incentive scheme
WACC	weighted average cost of capital
WARL	weighted average remaining life

## 5 Regulatory depreciation

Depreciation is the allowance provided so capital investors recover their investment over the economic life of the asset (return of capital). In deciding whether to approve the depreciation schedules submitted by CitiPower, we make determinations on the indexation of the regulatory asset base (RAB) and depreciation building blocks for CitiPower's 2016–20 regulatory control period.<sup>1</sup> The regulatory depreciation allowance is the net total of the straight-line depreciation (negative) and the indexation (positive) of the RAB.

This attachment sets out our preliminary decision on CitiPower's regulatory depreciation allowance. It also presents our preliminary decision on the proposed depreciation schedules, including an assessment of the proposed standard asset lives and remaining asset lives to be used for forecasting the depreciation allowance.

### 5.1 Preliminary decision

We do not accept CitiPower's proposed regulatory depreciation allowance of \$297.3 million (\$ nominal) for the 2016–20 regulatory control period.<sup>2</sup> Instead, we determine a regulatory depreciation allowance of \$304.6 million (\$ nominal) for CitiPower. This amount represents an increase of \$7.3 million (or 2.4 per cent) on the proposed amount. In coming to this decision:

- We accept CitiPower's proposed asset classes and its straight-line depreciation method used to calculate the regulatory depreciation allowance. We consider CitiPower's proposed asset classes are consistent with those approved at the 2011–15 distribution determination. However, we have included a new 'Land' asset class that will consist of any land related forecast capex (section 5.4.1).<sup>3</sup>
- We accept CitiPower's proposed standard asset lives for its existing asset classes, with the exception of the Victorian Bushfires Royal Commission ('VBRC') asset class. We consider these lives are consistent with those approved at the 2011–15 distribution determination, and reflect the nature and economic lives of the assets. For the 'VBRC' asset class, we consider that the standard asset life should equal the standard asset life for the 'Distribution system assets' class, instead of the remaining asset life.
- We do not accept CitiPower's proposed average depreciation method to calculate remaining asset lives at 1 January 2016. However, consistent with CitiPower's submission to the AER's issues paper, we have applied a year-by-year tracking approach to determine the depreciation for existing assets.<sup>4</sup> These calculations are

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<sup>1</sup> NER, cl. 6.12.1, 6.4.3.

<sup>2</sup> CitiPower, *Regulatory proposal 2016–20*, April 2015, pp. 248.

<sup>3</sup> NER, cl. 6.5.5(b)(1).

<sup>4</sup> In earlier decisions the AER termed this approach 'individual tracking'. CitiPower and its consultant, Incenta, referred to it as the 'baseline' approach or 'direct method'. The new label, year-by-year tracking, identifies the key

made in a separate model, then the depreciation amounts are substituted directly into the post-tax revenue model (PTRM) (section 5.4.2).

- We accept CitiPower’s proposal to accelerate the depreciation of a particular asset sub-class, ‘Supervisory cables’. The changed depreciation schedule reflects economically justified replacement that has changed the economic life of the assets (section 5.4.3).<sup>5</sup>
- We made determinations on other components of CitiPower’s proposal that also affect the forecast regulatory depreciation allowance—for example, the forecast capex (attachment 6), the opening RAB value (attachment 2) and the forecast inflation rate (attachment 3).<sup>6</sup>

Table 5.1 sets out our preliminary decision on the annual regulatory depreciation allowance for CitiPower’s 2016–20 regulatory control period.

**Table 5.1 AER’s preliminary decision on CitiPower’s depreciation allowance for the 2016–20 regulatory control period (\$ million, nominal)**

	2016	2017	2018	2019	2020	Total
Straight-line depreciation	102.8	103.7	109.4	114.9	121.9	552.7
Less: inflation indexation on opening RAB	44.9	47.3	50.0	52.0	53.9	248.1
<b>Regulatory depreciation</b>	<b>57.9</b>	<b>56.3</b>	<b>59.4</b>	<b>62.9</b>	<b>68.1</b>	<b>304.6</b>

Source: AER analysis.

## 5.2 CitiPower’s proposal

For the 2016–20 regulatory control period, CitiPower proposed a total forecast regulatory depreciation allowance of \$297.3 million (\$ nominal). To calculate the depreciation allowance, CitiPower proposed:<sup>7</sup>

- the straight-line depreciation method employed in our PTRM
- the closing RAB value at 31 December 2015 derived from our roll forward model (RFM)
- to use proposed forecast capex for the 2016–20 regulatory control period
- an average depreciation approach to determine remaining asset lives of existing assets at 1 January 2016

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distinguishing feature of this approach. It does not involve tracking the depreciation on individual assets. CitiPower and Powercor, *Submission in response to the issues paper, Depreciation*, 13 July 2015.

<sup>5</sup> NER, cl. 6.5.5(b)(1).

<sup>6</sup> NER, cl. 6.5.5(a)(1).

<sup>7</sup> CitiPower, *Regulatory proposal 2016–20*, April 2015, pp. 247–248.



- standard asset lives for depreciating new assets associated with forecast capex for the 2016–20 regulatory control period consistent with those approved in the 2011–15 distribution determination, with one exception:
  - the standard asset life for the ‘VBRC’ asset class was set to equal the remaining asset life of the ‘Distribution system assets’, which was 20.8 years.
- to accelerate the depreciation of some existing assets, through the creation of a new ‘Supervisory cables’ asset class with a value of \$14.7 million (as at 1 January 2016) and a remaining asset life of five years.<sup>8</sup>

Table 5.2 sets out CitiPower’s proposed depreciation allowance for the 2016–20 regulatory control period.

**Table 5.2 CitiPower’s proposed depreciation allowance for the 2016–20 regulatory control period (\$ million, nominal)**

	2016	2017	2018	2019	2020	Total
Straight-line depreciation	98.7	101.6	112.3	123.1	133.3	569.0
Less: inflation indexation on opening RAB	46.9	50.3	54.6	58.4	61.5	271.7
<b>Regulatory depreciation</b>	<b>51.8</b>	<b>51.3</b>	<b>57.8</b>	<b>64.7</b>	<b>71.8</b>	<b>297.3</b>

Source: CitiPower, *Proposed PTRM*, April 2015.

### 5.3 AER’s assessment approach

We determine the regulatory depreciation allowance using the PTRM as a part of a service provider’s annual revenue requirement.<sup>9</sup> The calculation of depreciation in each year is governed by the value of assets included in the RAB at the beginning of the regulatory year, and by the depreciation schedules.<sup>10</sup>

Our standard approach to calculating depreciation is to employ the straight-line method set out in the PTRM. We consider the straight-line method satisfies the NER requirements in clause 6.5.5(b) as it provides an expenditure profile that reflects the nature of assets over their economic life.<sup>11</sup> Regulatory practice has been to assign a standard asset life to each category of assets that represents the economic or technical life of the asset or asset class. We must consider whether the proposed depreciation schedules conform to the following key requirements:

<sup>8</sup> The new asset class is established by transferring the residual value of the existing assets out of the ‘Distribution system assets’ class. CitiPower, *Regulatory Proposal 2016–2020*, April 2015, pp. 246–248.

<sup>9</sup> NER, cls. 6.4.3(a)(3) and (b)(3).

<sup>10</sup> NER, cl. 6.5.5(a).

<sup>11</sup> NER, cl. 6.5.5(b)(1).

- the schedules depreciate using a profile that reflects the nature of the assets of category of assets over the economic life of that asset or category of assets<sup>12</sup>
- the sum of the real value of the depreciation that is attributable to any asset or category of assets must be equivalent to the value at which that asset or category of assets was first included in the RAB for the relevant distribution system.<sup>13</sup>

If a service provider's building block proposal does not comply with the above requirements, then we must determine the depreciation schedules for the purpose of calculating the depreciation for each regulatory year.<sup>14</sup>

The regulatory depreciation allowance is an output of the PTRM. We therefore assessed the service provider's proposed regulatory depreciation allowance by analysing the proposed inputs to the PTRM for calculating that allowance. The key inputs include:

- the opening RAB at 1 January 2016
- the forecast net capex in the 2016–20 regulatory control period
- the forecast inflation rate for that period
- the standard asset life for each asset class—used for calculating the depreciation of new assets associated with forecast net capex in the regulatory control period

We usually depreciate a service provider's existing assets in the PTRM by using remaining asset lives at the start of a regulatory control period. Our preferred method to establish a remaining asset life for each asset class is the weighted average remaining life approach.<sup>15</sup> However, CitiPower has submitted an alternative approach, as discussed in section 5.4.1.

Our preliminary decision on a service provider's regulatory depreciation allowance reflects our determinations on the forecast capex, forecast inflation and opening RAB at 1 January 2016 (the first three building block components in the above list). Our determinations on these components of the service provider's proposal are discussed in attachments 6, 3 and 2 respectively.

In this attachment, we assess CitiPower's proposed standard asset lives against:

- the approved standard asset lives in the distribution determination for the 2011–15 regulatory control period

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<sup>12</sup> NER, cl. 6.5.5(b)(1).

<sup>13</sup> NER, cl. 6.5.5(b)(2).

<sup>14</sup> NER, cl. 6.5.5(a)(ii).

<sup>15</sup> This method rolls forward the remaining asset life for an asset class from the beginning of the 2011–15 regulatory control period. We consider this method better reflects the mix of assets within an asset class, when they were acquired over that period (or if they were existing assets), and the remaining value of those assets (used as a weight) at the end of the period.

- the standard asset lives of comparable asset classes approved in our recent distribution determinations for other service providers.

CitiPower's proposal also included accelerated depreciation of assets which have a residual value and are being replaced. Our assessment approach for accelerated depreciation aligns with our general approach. One key consideration is whether the accelerated depreciation produces depreciation schedules that reflect the economic life of the affected assets, as set out in clause 6.5.5(b)(1) of the NER.<sup>16</sup> Our assessment is also conceptually linked to the assessment of the proposed replacement capex against the relevant capex criteria in the NER. As described in attachment 6, our capex assessment is at a high level and we do not determine the specific projects that CitiPower must undertake. Nonetheless, the underlying principle remains whether it is efficient and prudent to undertake the capex to replace the assets. If so justified, this suggests that it might no longer be economically efficient to use the replaced assets to provide standard control services and the depreciation schedules associated with the residual value of the replaced assets could possibly be accelerated to reflect their reduced remaining economic life.

### 5.3.1 Interrelationships

The regulatory depreciation allowance is a building block component of the annual revenue requirement.<sup>17</sup> Higher (or quicker) depreciation leads to higher revenues over the regulatory control period. It also causes the RAB to reduce more quickly (assuming no further capex). This outcome reduces the return on capital allowance, although this impact is usually secondary to the increased depreciation allowance.

Ultimately, however, a service provider can only recover the capex that it incurred on assets once. The depreciation allowance reflects how quickly the RAB is being recovered, and it is based on the remaining and standard asset lives used in the depreciation calculation. It also depends on the level of the opening RAB and the forecast capex. Any increase in these factors also increases the depreciation allowance.

To prevent double counting of inflation through the WACC and the RAB, the regulatory depreciation allowance also has an offsetting reduction for indexation of the RAB.<sup>18</sup> Factors that affect forecast inflation and/or the size of the RAB will affect the size of this indexation adjustment.

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<sup>16</sup> This includes an overall assessment across all asset classes, mitigating the risk that selective downward revision of remaining lives for specific asset classes (or sub-classes) will lead to a biased outcome.

<sup>17</sup> The PTRM distinguishes between straight-line depreciation and regulatory depreciation, the difference being that regulatory depreciation is the straight-line depreciation minus the indexation adjustment.

<sup>18</sup> If the asset lives are extremely long, such that the straight-line depreciation rate is lower than the inflation rate, then negative regulatory depreciation can emerge. In this case the indexation adjustment is greater than the straight-line depreciation.

Figure 2.1 (in attachment 2) shows the relative size of the inflation and straight-line depreciation and their impact on the RAB. A 10 per cent increase in the straight-line depreciation causes revenues to increase by about 4.0 per cent.

## 5.4 Reasons for preliminary decision

We accept CitiPower's proposed straight-line depreciation method for calculating the regulatory depreciation allowance. We also accept the proposed asset classes, though we have added a new 'Land' asset class. Further, we accept the proposed standard asset lives, with the exception of the 'VBRC' asset class. Finally, we accept CitiPower's proposal to accelerate the depreciation of one asset sub-class. However, we do not accept CitiPower's proposed average depreciation method to calculate remaining asset lives as at 1 January 2016, and have instead applied a year-by-year tracking approach.

Overall, we increased CitiPower's proposed forecast regulatory depreciation allowance by \$7.3 million (or 2.4 per cent) to \$304.6 million (\$ nominal). This amendment also reflects our determinations regarding other components of CitiPower's regulatory proposal—for example, the forecast capex (attachment 6), the forecast inflation rate (attachment 3) and the opening RAB as at 1 January 2016 (attachment 2)—that affect the forecast regulatory depreciation allowance.

### 5.4.1 Standard asset lives

We accept CitiPower's proposed standard asset lives for its existing asset classes, with the exception of the 'VBRC' asset class. These asset lives are consistent with the approved standard asset lives for the 2011–15 regulatory control period and comparable with the standard asset lives approved in our recent determinations for other electricity distribution service providers.<sup>19</sup> We are satisfied these proposed standard asset lives reflect the nature of the assets over the economic lives of the asset classes.<sup>20</sup>

We do not accept CitiPower's proposed standard asset life for the 'VBRC' asset class of 20.8 years, equal to the remaining asset life of the 'Distribution system assets' class as at 1 January 2016.<sup>21</sup> The 'VBRC' asset class will contain capital expenditure arising from the Victorian Bushfires Royal Commission (VBRC).<sup>22</sup> The VBRC was established to investigate the causes and impact of the major bushfires in Victoria in 2009. The VBRC made a number of recommendations on bushfire mitigation initiatives related to

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<sup>19</sup> AER, *Final decision, Victorian electricity distribution network service providers, Distribution determination 2011–2015*, October 2010, p. 467; AER, *Final decision: Ausgrid distribution determination 2015–16 to 2018–19, attachment 5*, April 2015, p. 10; AER, *Final decision: Endeavour distribution determination 2015–16 to 2018–19, attachment 5*, April 2015, p. 9; and AER, *Final decision: Essential Energy distribution determination 2015–16 to 2018–19, attachment 5*, April 2015, p. 9.

<sup>20</sup> NER, cl 6.5.5(b)(1).

<sup>21</sup> CitiPower, *Regulatory proposal 2016–20*, April 2015, p. 248.

<sup>22</sup> CitiPower proposed a zero opening value for the 'VBRC' asset class as at 1 January 2016, but allocated \$11.0 million (\$ 2015) of capex to this asset class across the 2016–20 regulatory control period.

the state's electricity distribution infrastructure.<sup>23</sup> In CitiPower's case, VBRC capex over the 2016–20 regulatory control period is to install armour rods and vibration dampers, conduct surveys to assess conductor clearance, and install spacers on specific aerial lines.<sup>24</sup>

Our preliminary decision is to set the standard asset life for the 'VBRC' asset class at 49 years, equal to the standard asset life of the 'Distribution system assets' class. We consider that the assets in both classes are broadly equivalent. We consider that had these assets been installed in the normal course of managing the network, they would have been assigned to the 'Distribution system assets' class with a standard asset life of 49 years. CitiPower has not provided any arguments that would justify assigning them a shorter economic life simply because they have been installed in response to the VBRC recommendations.

Efficient management practices seek to maximise the operational life of all assets, including refurbishing and re-using replaced assets. As a general principle, we consider that it is inappropriate to reduce the life of new assets simply because they are used in conjunction with other, older assets. We acknowledge there may be instances where new assets will not reach their usual standard asset life, and instead will be limited to the remaining asset life of older assets they are co-located with. However, consistent with our position in earlier regulatory decisions, we expect these to be the exception and to be supported by detailed justification on a case-by-case basis.<sup>25</sup> CitiPower has not provided any such evidence.

Our preliminary decision is to also include an additional 'Land' asset class. Using CitiPower's proposed existing asset classes, any expenditure related to land is being allocated to the existing asset classes and the value has been allowed to depreciate along with the other non-land related assets. We do not consider this appropriate, as land is generally considered a non-depreciable asset.<sup>26</sup> We therefore consider that a new 'Land' asset class should be added and not assigned with a standard asset life (assigned a term of 'n/a' for modelling purposes), which will include any future capex related to land.<sup>27</sup>

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<sup>23</sup> There are several steps in this process. CitiPower details its plans for bushfire risk mitigation in its Electricity Safety Management Scheme (ESMS), which also includes a specific Bushfire Management Plan (BMP). CitiPower must submit the ESMS and BMP to Energy Safe Victoria (ESV), which is the independent technical regulator created by the Victorian Government under the Energy Safe Victoria Act 2005. The ESV assesses CitiPower's ESMS and BMP with regard to the VBRC recommendations, in accordance with the Electricity Safety Act 1998. Once approved, the ESV also monitors CitiPower's ongoing adherence to those plans.

<sup>24</sup> CitiPower, *Regulatory proposal 2016–20*, April 2015, pp. 137–141.

<sup>25</sup> AER, *Final decision, TransGrid transmission determination, 2009–10 to 2013–14*, 28 April 2009, pp. 108–110.

<sup>26</sup> According to the Australian accounting standards, land is generally not depreciable because land values tend to increase over time due to the limited supply of, and the increasing demand for, land (Australian Accounting Standard Board, *Accounting standard AASB1021: Depreciation*, August 1997, pp. 10–11). The Income Tax Assessment Act (ITAA) 1997 excludes land from the definition of a 'depreciating asset' (ITAA 1997, s. 40-30).

<sup>27</sup> We do not consider that the creation of the new 'Land' asset class requires the reevaluation of the standard asset life for the 'Distribution system assets' asset class, where land assets were previously allocated in most instances. Our reasoning is set out in our preliminary decision for CitiPower's sister company, Powercor.

CitiPower's forecast capex proposal does not include expenditure related to land, so this decision will have no immediate impact on the RAB or regulatory depreciation. However, the same set of asset classes are used for calculating the tax asset base (TAB) and tax depreciation. As described in attachment 8, there will be a residual tax asset value assigned to the new 'Land' asset class as at 1 January 2016.

We received submissions from the CCP and the Victorian Energy Consumer and User Alliance (VECUA) stating that the standard asset lives for CitiPower differed from the actual lives, and from the standard asset lives for equivalent assets used by other distributors.<sup>28</sup> Each submitted that these variations have major implications for depreciation and allowed distributors to choose asset lives that optimise their returns for each revenue reset.

We note that the asset lives reported by CCP and VECUA are from disaggregated categories used to model replacement capital expenditure (repex), rather than the higher-level categories used when calculating the regulatory depreciation allowance.<sup>29</sup> Although individual distributors may have higher or lower standard asset lives for specific repex asset categories, there is less variation in the standard asset lives of the aggregated categories.<sup>30</sup> The exceptions are the two 'Other assets' categories reported by CPP and VECUA, where the variation reflects different categorisation and reporting of assets across the different distributors. We consider that the standard asset lives approved for CitiPower to calculate the regulatory depreciation allowance are comparable to the equivalent categories used in other regulatory determinations.<sup>31</sup>

Table 5.3 sets out our preliminary decision on CitiPower's standard asset lives for the 2016–20 regulatory control period.

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<sup>28</sup> CCP3, *Response to proposals from Victorian electricity distribution network service providers for a revenue reset for the 2016-2020 regulatory period*, 5 August 2015, pp. 49–51; Victorian Energy Consumer and User Alliance (VECUA), *Submission to the AER Victorian Distribution Networks' 2016–20 Revenue Proposals*, July 2013, pp. 30–31.

<sup>29</sup> The different levels of disaggregation/aggregation are each appropriate for the relevant purpose.

<sup>30</sup> In general, each distributor has some repex asset classes with below average standard asset lives, and some with above average asset lives. When these repex asset classes are aggregated into the higher level asset classes used in the RFM and PTRM, the two offset each other. Further, we must allow for some variation in standard asset lives even for disaggregated categories reflecting the specific nature of each distributor's network.

<sup>31</sup> This includes the April 2015 final determinations for the NSW electricity distributors, as well as the other Victorian distribution determinations made contemporaneously with this preliminary decision.

**Table 5.3 AER’s preliminary decision on CitiPower’s standard asset lives at 1 January 2016 (years)**

Asset class	Standard asset life (years)
Subtransmission	50.0
Distribution system assets	49.0
Standard metering <sup>a</sup>	n/a
Public lighting <sup>a</sup>	n/a
SCADA/Network control	13.0
Non-network general assets - IT	6.0
Non-network general assets - other	10.0
VBRC	49.0
Supervisory cables <sup>a</sup>	n/a
Old SWER ACRs <sup>b</sup>	n/a
Land <sup>c</sup>	n/a

Source: AER analysis.

n/a: not applicable

- (a) The ‘Standard metering’, ‘Public lighting’ and ‘Supervisory cables’ asset classes have a standard asset life of ‘n/a’ because there is no forecast capex associated with these asset classes.
- (a) CitiPower proposed an ‘Old SWER ACRs’ asset class to preserve consistency with its sister company, Powercor. For CitiPower the asset class has no opening value and no forecast capex, so has no impact on depreciation or the RAB over the 2016–20 regulatory control period.
- (b) We have included a ‘Land’ asset class consistent with that created for the tax asset base (attachment 8). This has no impact on the RAB over the 2016–20 regulatory control period as there is no opening RAB value and CitiPower have not proposed any land capex over the 2016–20 regulatory control period.<sup>32</sup>

## 5.4.2 Remaining asset lives

We do not accept CitiPower’s proposed average depreciation method to calculate remaining asset lives at 1 January 2016. However, consistent with CitiPower’s submission to the AER’s issues paper, we have applied a new approach to determine the depreciation of existing assets.<sup>33</sup> Under this approach, the capex for each year of a regulatory control period will be depreciated separately. We label the new approach the

<sup>32</sup> CitiPower, *RE: Vic. EDPR - CitiPower - IR#004 - 19 June 2015*, 24 June 2015.

<sup>33</sup> CitiPower and Powercor, *Submission in response to the issues paper, Depreciation*, 13 July 2015, and Incenta, *Calculation of depreciation – review of the AER’s approximate calculation: CitiPower, Powercor and Jemena Electricity Networks*, July 2015.



year-by-year tracking approach.<sup>34</sup> Each asset class will now have an expanding list of sub-classes to reflect every regulatory year in which capital expenditure on those assets was incurred. This extra data helps track remaining asset values and associated depreciation.

In summary, we consider that year-by-year tracking:<sup>35</sup>

- produces depreciation schedules that reflect the nature of the assets and their economic life<sup>36</sup>
- ensures that total depreciation (in real terms) equals the initial value of the assets.<sup>37</sup>

We therefore adopt the year-by-year tracking approach put forward by CitiPower because it is consistent with the legislative requirements in the NER.<sup>38</sup>

This is a departure from previous decisions where we adopted our standard approach, known as weighted average remaining life (WARL). We consider that WARL is also consistent with the requirements in the NER.<sup>39</sup> Since the depreciation schedules proposed by CitiPower (based on average depreciation) do not conform with the NER,<sup>40</sup> we have applied an alternative approach that we consider does meet the legislative requirements.<sup>41</sup> We have adopted the year-by-year tracking approach in accordance with CitiPower's stated preference for this approach in its July 2015 submission.<sup>42</sup>

However, we have made some changes to CitiPower's implementation of the year-by-year tracking approach to align with the requirements of the PTRM and to correct some modelling errors. The method and implementation issues are discussed in turn below.

## **Method**

In its regulatory proposal, CitiPower adopted an average depreciation approach to determine remaining assets lives to be used for depreciating existing assets at 1 January 2016. However, CitiPower has subsequently submitted to change this approach. This was done in response to the AER's June 2015 issues paper, which set

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<sup>34</sup> In earlier decisions the AER termed this approach 'individual tracking'. CitiPower and its consultant, Incenta, referred to it as the 'baseline' approach. The new label, year-by-year tracking, identifies the key distinguishing feature of this approach. It does not involve tracking the depreciation on individual assets.

<sup>35</sup> Our detailed reasoning is set out later in this section.

<sup>36</sup> NER, cl. 6.5.5(b)(1).

<sup>37</sup> NER, cl. 6.5.5(b)(2).

<sup>38</sup> We discuss below how year-by-year tracking is implemented such that the economic lives of existing assets are consistent with previous decisions, and thereby also meets cl. 6.5.5(b)(3) of the NER.

<sup>39</sup> Our detailed reasoning on why we consider that the WARL approach meets clause 6.5.5(b) of the NER is set out later in this section.

<sup>40</sup> Our detailed reasoning on why we consider that the 'average depreciation' approach does not meet clause 6.5.5(b) of the NER is set out later in this section.

<sup>41</sup> NER, cl.6.5.5(a)(2).

<sup>42</sup> CitiPower and Powercor, *Submission in response to the issues paper, Depreciation*, 13 July 2015, p. 6.



out our initial assessment of CitiPower's proposal.<sup>43</sup> Also, shortly before we released this issues paper, we released preliminary decisions for South Australia Power Networks and Ergon Energy. In these preliminary decisions we rejected their proposed average depreciation approaches and instead applied the standard WARL approach.<sup>44</sup>

In its response to the issues paper CitiPower endorsed a year-by-year tracking approach. The year-by-year tracking approach was used to compare outcomes under the average depreciation approach and the WARL approach in the South Australian Power Networks and Ergon Energy preliminary decisions.<sup>45</sup> CitiPower's consultant, Incenta, also endorsed such an approach.<sup>46</sup>

The year-by-year tracking approach is a more complex approach than WARL or the average depreciation approach. In particular, the capex of each asset class will need to be tracked as disaggregated yearly categories over time, preserving these discrete categories across multiple regulatory control periods. These separately tracked expenditures can be thought of as asset sub-classes.<sup>47</sup> The data therefore expands over time and models such as the AER's PTRM and RFM may need to be expanded to accommodate the increasing number of asset sub-classes.<sup>48</sup> Alternatively, separate depreciation models can be developed as CitiPower has done. The benefit of this approach is the increased granularity and transparency of disaggregated year-by-year tracking of capex. However, it is more complex and costly to administer.<sup>49</sup>

Adopting the year-by-year tracking approach now does not deal with the legacy issue of previous remaining asset life determinations. The approved remaining lives for existing assets as at 1 January 2011 were calculated using an average depreciation approach. For the reasons discussed in this preliminary decision, these lives are shorter than if year-by-year tracking had been used in the past. We do not consider that such decisions on remaining asset lives can be revisited.<sup>50</sup> Therefore, we accept CitiPower's submission that the remaining asset lives for existing assets as at 1 January 2011 reflect those as approved at the last determination.<sup>51</sup> Our expectation is that this approach will be maintained into the future to prevent any further issues

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<sup>43</sup> AER, *Issues paper, Victorian electricity distribution pricing review, 2016 to 2020*, June 2015.

<sup>44</sup> AER, *Preliminary decision, SA Power Networks determination 2015–16 to 2019–20, Attachment 5 – Regulatory depreciation*, April 2015, pp. 5-11 to 5-18; and AER, *Preliminary decision, Ergon Energy determination 2015–16 to 2019–20, Attachment 5 – Regulatory depreciation*, April 2015, pp. 5-11 to 5-20.

<sup>45</sup> In earlier decisions, the AER termed this approach 'individual tracking'. CitiPower and its consultant, Incenta, referred to this approach as the 'baseline' approach.

<sup>46</sup> Incenta, *Calculation of depreciation – review of the AER's approximate calculation: CitiPower, Powercor and Jemena Electricity Networks*, July 2015, p. 14.

<sup>47</sup> For example, under the IT asset class, there would be asset sub-classes for 2016 IT, 2017 IT, 2018 IT, etc.

<sup>48</sup> Making amendments to these standardised models risks introducing potential errors, so the depreciation schedules will have to be checked in greater detail in future.

<sup>49</sup> Further, the increased complexity makes it more difficult for other stakeholders (including consumer groups) to understand and engage with the proposal. For this reason it is important that any additional models developed to implement year-by-year tracking are made as accessible as possible.

<sup>50</sup> NER, cl. 6.5.5(b)(3).

<sup>51</sup> Intergenerational equity issue will remain in relation to these existing assets as they are likely to be fully depreciated before their technical life expires.

associated with switching depreciation approaches. In this regard we note CitiPower's year-by-year tracking model is set up with some calculations for capex up to 2040 reflecting its intention to apply this model to each future regulatory control period.

Depreciating capital expenditures as disaggregated yearly categories is also likely to result in more variable depreciation profiles over time, because depreciation becomes more dependent on the timing of particular capital expenditure programs.<sup>52</sup> In contrast, a single weighted average remaining asset life for an asset class smooths the recovery profile across all assets within that class. The impact on the revenue profile will depend largely on the depreciation allowance's share of total revenues. In switching the depreciation approach from that previously adopted, it will take some time for the implications for the variability of depreciation schedules to become apparent.<sup>53</sup> Nonetheless, we still consider that year-by-year tracking has the potential to increase the variability in depreciation. This is in contrast to the WARL approach, which has been our standard approach across numerous regulatory decisions and therefore has a demonstrated track record of accommodating a range of circumstances without causing adverse variability

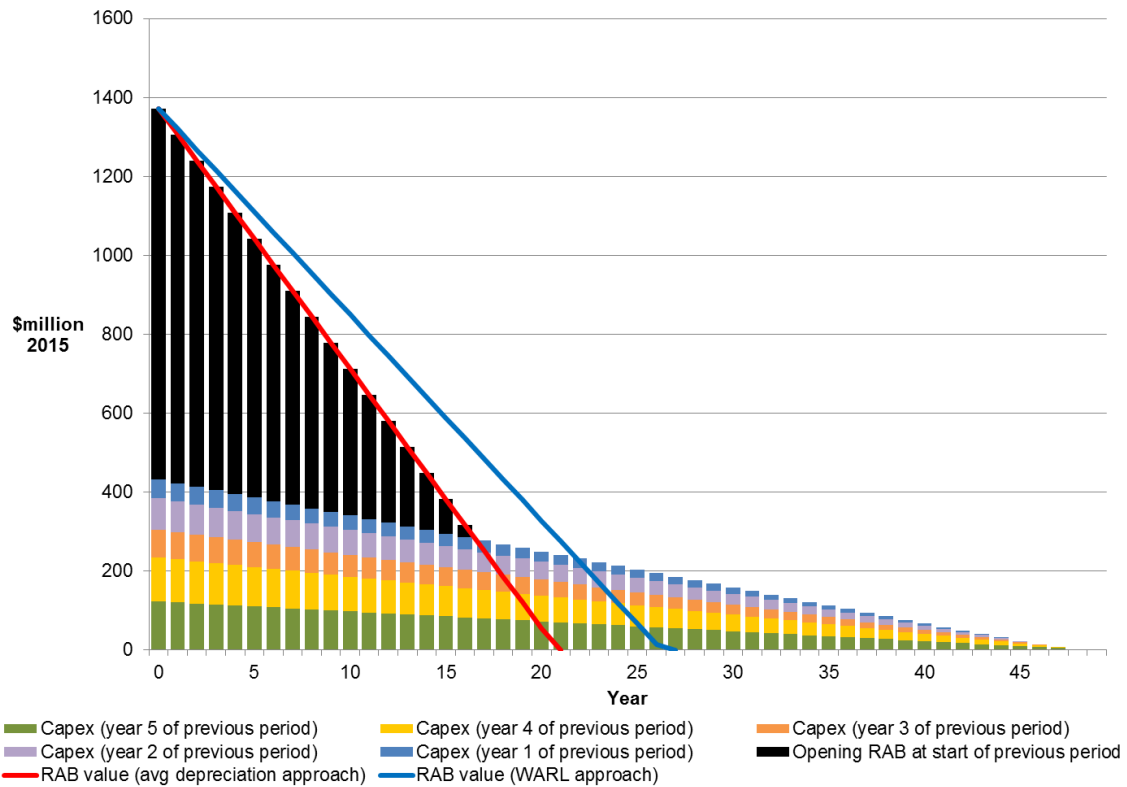
Figure 5.1 shows the impact of the year-by-year tracking (stacked columns, with each bar representing a different year of capex that will expire at a different time), WARL (blue line), and average depreciation (red line) approaches in relation to CitiPower's 'Distribution system assets' asset class. This example assumes the asset class incurs no further capex.

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<sup>52</sup> In its submission to the issues paper, CitiPower provided a price trend model that it suggested showed the tracking approach did not lead to greater revenue volatility. The problem with this example is that it assumes the same capex occurs each year into the future. The AER's concern is that year-by-year tracking creates fluctuation in return of capital reflecting the yearly fluctuations in capex. If it is assumed there are no fluctuations in capex into the future then none will appear. That assumption is not realistic. In addition, because year-by-year tracking is only being implemented now, it will take some time for the fluctuations from year-by-year tracking to become apparent. The grouped assets prior to 1 January 2011 still dominate the overall depreciation trend, as can also be seen in Figure 5.1.

<sup>53</sup> In terms of Figure 5.1 there is only a single 'kink' in the total of the year-by-year tracked asset values due to assets previously being grouped together. In the long run, there will be many kinks depending on the timing of capital expenditures.

**Figure 5.1 Projection of the value of assets for 'Distribution system assets' asset class over time (\$million, 2015)**



Source: AER analysis.

The adoption of year-by-year tracking will mean that the value of distribution system assets in the RAB as at 1 January 2016 will not be fully depreciated until 49 years into the future. Under CitiPower’s proposed average depreciation approach these would have been fully depreciated in 21 years, while under the AER’s preferred WARL approach the assets would have been fully depreciated in 27 years. As illustrated in the figure above, the WARL approach leads to under-recovery and over-recovery of depreciation being balanced out through time—over the lives of all assets in the group.<sup>54</sup> The average depreciation approach does not achieve this balancing, as there is no recognition of when older assets expire.<sup>55</sup> However, with the NER requirements limiting assessment of depreciation to the nature of the assets and their expected economic lives, we accept year-by-year tracking as being superior in this regard.

<sup>54</sup> Compared to the year-by-year tracking approach, the WARL approach under returns depreciation in some years and over returns depreciation in others. However, the under and over recovery balances out so there is no net difference in the timing of depreciation between the approaches, over the life of the assets.

<sup>55</sup> Compared to year-by-year tracking or WARL, the average depreciation approach over returns depreciation in some (or all) years but never under returns depreciation. Hence, over the life of the assets, there is a net difference in the timing of depreciation between the approaches. The average depreciation approach provides earlier depreciation than either of the other two approaches, as is evident in Figure 5.1.

As is shown in Figure 5.1, all three approaches result in total depreciation equalling (in real terms) the initial value of the assets, and so all three approaches conform with clause 6.5.5(b)(2) of the NER.<sup>56</sup> However, the three approaches differ with regard to the fulfilment of clause 6.5.5(b)(1) of the NER:

- Average depreciation does not meet this requirement, because it brings forward a proportion of the assets' depreciation so that it is received earlier than the underlying economic life of the assets. The resulting depreciation schedules will reflect asset lives that are shorter than the standard asset lives assigned to the assets when capex is incurred.
- Year-by-year tracking meets this requirement, because the depreciation received each year will reflect the underlying economic life of the assets. The resulting depreciation schedules will reflect the standard asset lives assigned to the assets when capex is incurred.
- WARL meets this requirement, because the depreciation received over the life of the assets will reflect the underlying economic life of the assets. Like the average depreciation approach, there will be some years where depreciation is received earlier than the underlying economic life of the assets. However, there will also be some years where depreciation is received later than the underlying economic life of the assets. These two effects will exactly offset each other. In aggregate, across the life of the assets, the resulting depreciation schedules will reflect the standard asset lives assigned to the assets when capex is incurred.

Overall, the outcome under year-by-year tracking approach means CitiPower will receive roughly the same amount of depreciation as it proposed under the average depreciation approach for the 2016–20 regulatory control period (subject to revised capex forecasts). However, in future regulatory control periods (when existing legacy assets expire) it will face lower depreciation, other things being equal.

Although we accept CitiPower's year-by-year tracking approach, we maintain our preference for the weighted average remaining life (WARL) approach, which is our standard approach used in other decisions. We hold this preference because the WARL:

- meets the requirements of the NER, in that it produces depreciation schedules that align with the economic life of the assets
- avoids the additional complexity inherent in year-by-year tracking, which brings with it additional administration costs and increased risk of error
- reduces the variability in depreciation schedules that may arise under year-by-year tracking.

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<sup>56</sup> Graphically, this means the blue line, red line and stacked columns all drop to zero (and do not drop below zero).

CitiPower challenged the WARL approach using what it termed a steady state example, where capex matched depreciation each year so the RAB was steady.<sup>57</sup> This example leads to an outcome that relies on the same amount of capex being added each year.<sup>58</sup> It does not, in our view, prove the WARL approach to determining remaining asset lives is mathematically flawed as described.

Simplifying the numbers in the example, CitiPower's method suggests the remaining asset life for an asset class comprising two assets, one asset with a life of one year and another asset with a life of 50 years, is 25.5 years. We note that the asset with a life of 50 years is worth 50 times more than the asset with a life of one year remaining (because it has been depreciating for 49 years).<sup>59</sup> Given the difference in value between the two assets, we consider that the average remaining asset life for this asset class should not be 25.5 years. The WARL is the correct measure to use for determining a single remaining asset life and would be 49 years in this simplified example.<sup>60</sup> Year-by-year tracking would result in the assets in this example being fully depreciated only after 50 years, not 25.5 years. We recognise that, towards the end of the asset life, the WARL approach leads to some depreciation being brought forward.<sup>61</sup> However, we still consider it the only appropriate approach where a single remaining asset life for an asset class is being determined.

We also note that with the adoption of forecast depreciation, we are proposing to extend the WARL to be calculated based on year-by-year tracking of remaining asset lives.<sup>62</sup> This approach will still provide an average remaining asset life and therefore can still lead to different outcomes than separately depreciating asset sub-classes. However, it will improve the precision of the remaining asset lives over time as more asset sub-classes are added. It also controls for the distortion caused by forecast depreciation, which differs from actual depreciation, as it is based on actual capex. This issue has implications for the implementation of year-by-year tracking as discussed below.

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<sup>57</sup> CitiPower and Powercor, *Submission in response to the issues paper, Depreciation*, 13 July 2015, pp. 4–5, and attachment 'CitiPower Powercor - Steady state example - 13 July 2005.xls'.

<sup>58</sup> If additional capex was no longer added to the asset class and the assumed 50 existing assets (with remaining asset lives ranging from 1 to 50 years) depreciated, CitiPower's approach suggests all assets should be fully depreciated within 25.5 years. This is despite half the assets in terms of numbers of units and about 75 per cent of the assets in terms of value having a remaining asset life of over 25.5 years.

<sup>59</sup> Assuming also that the amount spent on both assets was initially the same as CitiPower does in its example.

<sup>60</sup> Under CitiPower's lengthier example where 75 per cent of the assets in terms of value have a remaining asset life greater than 25.5 years, the WARL would be 33.7 years.

<sup>61</sup> As set out above, while some depreciation is brought forward (that is, received earlier than it would otherwise have been received), some depreciation is pushed back (that is, received later than it would otherwise have been received). The two effects will exactly offset each other.

<sup>62</sup> AER, *Explanatory statement: Proposed amendment Electricity transmission network service providers Roll forward model (version 3)*, July 2015, section 4.3.

## Implementation

CitiPower has set up a separate model to implement year-by-year tracking that determines depreciation on existing assets as at 1 January 2016.<sup>63</sup> This model depreciates assets acquired prior to 1 January 2011 using the remaining asset lives approved at the last reset.<sup>64</sup> It separately depreciates each year's capex from 1 January 2011, using the standard asset life for the particular asset class. Each year's capex (for example, capex for the IT asset class in 2012) becomes a separate asset sub-class.

We accept the proposed implementation, with the following proposed amendments:

1. We hardcoded the outputs from the separate depreciation model directly into the PTRM. This hardcoding overrides the depreciation calculations in the 'Assets' sheet of the PTRM that usually uses a single remaining asset life for each asset class. To this end, the year-by-year tracking approach does away with the requirement for calculating an average remaining asset life for the asset class.<sup>65</sup> It is unnecessary to insert remaining asset lives in the PTRM and we therefore have removed them.
2. We made adjustments to the calculation of the depreciation of the 2010 capex adjustments. The adjustment ensures that the depreciation is based on the standard asset life of the asset class instead of the remaining asset life as proposed. We consider this more appropriate, as the year of capex is known, and the remaining asset life of assets at 1 January 2011 does take this adjustment into account. We have also adjusted the depreciation model for any changes made to the RAB roll forward (discussed in attachment 2) that are also applicable.
3. We extended the depreciation on existing assets in the separate depreciation model to 2070. This is done so that the appropriate effective tax rate can be modelled in the PTRM.

As discussed in attachment 2, we have determined that forecast depreciation, rather than actual depreciation, will be used to roll forward the RAB over the 2016–20 regulatory control period. The adoption of a forecast depreciation approach in the RAB roll forward will create some distortion in the depreciation of disaggregated asset sub-classes, which can reduce the benefit of year-by-year tracking (particularly for short lived assets). For example, a particular year's forecast capex may prove to be much greater than actual capex. In this case, the asset sub-class (for example, 2016 IT) will have its value depreciated by more than the asset sub-class' forecast depreciation

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<sup>63</sup> CitiPower and Powercor, *Submission in response to the issues paper, Depreciation*, 13 July 2015, p. 5, and attachment 'CitiPower Powercor - CitiPower Baseline Method - 13 July 2005.xls'.

<sup>64</sup> NER, cl. 6.5.5(b)(3).

<sup>65</sup> However, as set out in section 8.4.4, the remaining asset lives as at 1 January 2016 are required to calculate the remaining tax asset lives at the same date. This is a one-off requirement arising from CitiPower's proposal to change its method of tax depreciation from diminishing value to straight line. We calculate the remaining asset lives consistent with year-by-year tracking in order to make this calculation.

would have suggested had actual capex been known at the time.<sup>66</sup> The depreciation amount of the asset sub-class in future years will then be relatively lower to offset this over-depreciation early in the asset's life.<sup>67</sup>

Forecast depreciation, coupled with the greater disaggregation of capital expenditures under year-by-year tracking, will also increase the prospect of negative asset sub-classes at the end of the regulatory control period. This would occur where actual capex was much lower than forecast for a particular year so that actual capex was less than the forecast depreciation allowance. When negative asset classes emerge at the end of the regulatory control period,<sup>68</sup> we consider these amounts should be returned to customers over the next regulatory control period.<sup>69</sup> This will be included in our assessment of CitiPower's proposed depreciation schedules at the next regulatory determination.

### 5.4.3 Accelerated depreciation

We accept CitiPower's proposal to accelerate the depreciation of supervisory cables.<sup>70</sup> The residual value of the existing assets will be transferred from the existing 'Distribution system assets' class to a new dedicated 'Supervisory cables' asset class with a remaining asset life of five years.

The supervisory cables perform two roles within the network, carrying protection signalling and general data between zone substations. CitiPower stated that these low-bandwidth copper cables are outdated equipment that should be replaced by a mix of new communications architecture (optical fibre and wireless equipment) supporting

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<sup>66</sup> For example, expenditure on IT may have been forecast to be \$120 in 2016. This would mean with an expected life of 6 years, the forecast depreciation for this asset sub-class would be \$20 a year. This sub-class would be expected to have a value at the end of the regulatory control period (2020, after 4 years of depreciation) of \$40 ( $\$120 - 4 \times (\$120/6)$ ). However, if actual expenditure on IT in 2016 was only \$90, the sub-class would have a value of only \$10 ( $\$90 - 4 \times (\$120/6)$ ) at the end of the regulatory control period if forecast depreciation is used to roll forward the value. If the expenditure on IT in 2016 was only \$60, the sub-class value would be -\$20 ( $\$60 - 4 \times (\$120/6)$ ) at the end of the regulatory control period.

<sup>67</sup> In terms of the example above, where expenditure on IT in 2016 was only \$90, the end of period value is \$10 instead of \$40. Over the 2021–25 regulatory control period this value would be depreciated at \$5 per annum ( $\$10/(6-4)$ ). This asset sub-class over its 6 years of life will therefore be depreciated as follows: \$20, \$20, \$20, \$20, \$5, \$5. In this case the number of years over which the asset is fully depreciated is unaffected and equal to the standard asset life of 6 years, except for the case where a negative sub-class develops, as discussed below.

<sup>68</sup> In terms of the example above, where expenditure on IT in 2016 was only \$60, the asset is fully depreciated (over-depreciated) within 4 years, not 6 years. The depreciation profile for this asset sub-class would be as follows: \$20, \$20, \$20, \$20, -\$20.

<sup>69</sup> Offsetting any negative closing asset sub-class value against another sub-class with a positive value within the same asset class would undermine the core reason year-by-year tracking is proposed. That is, to more accurately reflect the remaining asset lives of disaggregated asset sub-classes.

<sup>70</sup> Accelerated depreciation does not change the total amount received in depreciation (return of capital), though it does change the timing of that receipt and the consequential return on capital.



modern communication protocols.<sup>71</sup> CitiPower proposed to replace the cables across the 2016–20 regulatory control period.

When assessing CitiPower’s proposal for accelerated depreciation, the relevant question is whether or not it is efficient and prudent to replace the supervisory cables with optical fibre and/or wireless equipment.<sup>72</sup>

CitiPower provided material to justify the replacement of the supervisory cables in its proposal and in response to a request for further information. These reasons include:<sup>73</sup>

- Modern control or protection systems are not designed to interface with the supervisory cables.
- The required parts to maintain the supervisory cables are no longer manufactured and difficult to obtain from second hand markets.
- It is becoming more difficult to employ technicians with the requisite skills to maintain these legacy systems.
- The adjacent electricity networks have ceased support of their supervisory networks, and interoperability must be preserved to maintain reliable system operation.

Whilst CitiPower did not provide a detailed cost/benefit analysis of the available options, we consider this information provides a reasonable level of justification given the materiality of the assets in question. The supervisory cables comprise 0.8 per cent of CitiPower’s RAB. Proposed capex on supervisory cable replacements will be \$5.5 million (\$ nominal) across the 2016–20 regulatory control period.<sup>74</sup> We are satisfied that it is efficient and prudent to replace these assets, and that the proposed capex on optical fibre and wireless equipment to replace the supervisory cables is consistent with the overall capex approved in attachment 6.<sup>75</sup> Therefore, we accept CitiPower’s proposal to change its depreciation schedule for the residual value of supervisory cables to align with the reduced economic life.<sup>76</sup>

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<sup>71</sup> CitiPower, *Regulatory proposal 2016–2020*, April 2015, pp. 164, 246–248, and CitiPower attachment 9-24, UXC Consulting, *Distribution network communications strategy, CitiPower–Powercor*, December 2012.

<sup>72</sup> In other words, we assess whether an efficient service provider would replace the assets. If it is economically efficient for the assets to still be in use, then we would consider that the existing depreciation schedule should be maintained.

<sup>73</sup> CitiPower, *Regulatory proposal 2016–2020*, April 2015, pp. 164, 246–248, and CitiPower attachment 9-24, UXC Consulting, *Distribution network communications strategy, CitiPower–Powercor*, December 2012; and CitiPower, *Response to AER Information request – Powercor #024 and CitiPower #025 – Accelerated depreciation of supervisory cables*, 2 September 2015.

<sup>74</sup> CitiPower, *Response to information request – Powercor #024 and CitiPower #025 (follow up question)*, 15 September 2015.

<sup>75</sup> As described in attachment 6, our capex assessment is at a high level and we do not determine the specific projects that CitiPower must undertake.

<sup>76</sup> NER, cl. 6.5.5(b)(1).



It is also necessary to estimate the residual value of the relevant assets, since their regulatory depreciation has not been separately tracked.<sup>77</sup> CitiPower proposed a bottom-up approach based on its asset register, using accounting (book) depreciation as a proxy for regulatory depreciation.<sup>78</sup> We accept this as a reasonable approach in the circumstances and so accept the proposed value of \$14.7 million (\$nominal) as at 1 January 2016.

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<sup>77</sup> The residual value is the starting value of the assets, less the depreciation already recovered, plus an adjustment for inflation.

<sup>78</sup> See 'CP PUBLIC MOD 1.41 – Supervisory Cables opening asset value.xls'.